

# National Academies' Review of the NIOSH Construction Research Program:

Goal 4 - Increase Understanding of Construction Sector  
Attributes and Contributing Factors for Improving  
Occupational Safety and Health

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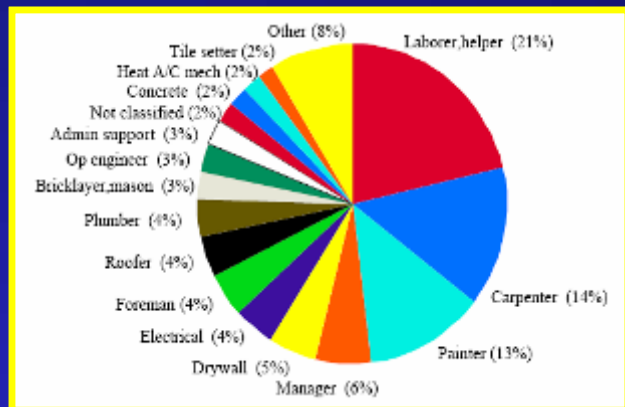


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# Five sub-goal areas

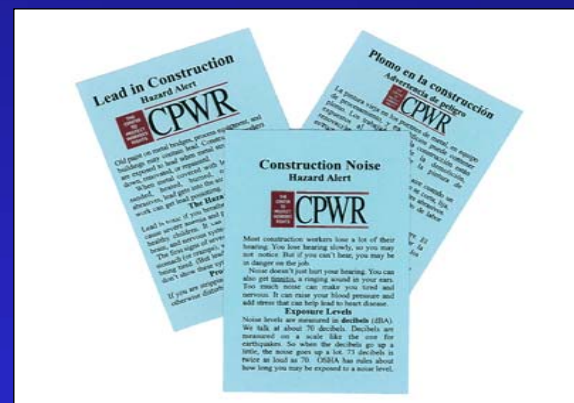
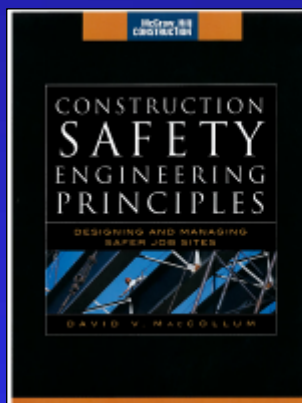
Note: Separate special focus presentation on surveillance



Surveillance

Special Populations

Training



Design

Diffusion



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# Issues

## Sub-goal (2): Special Populations

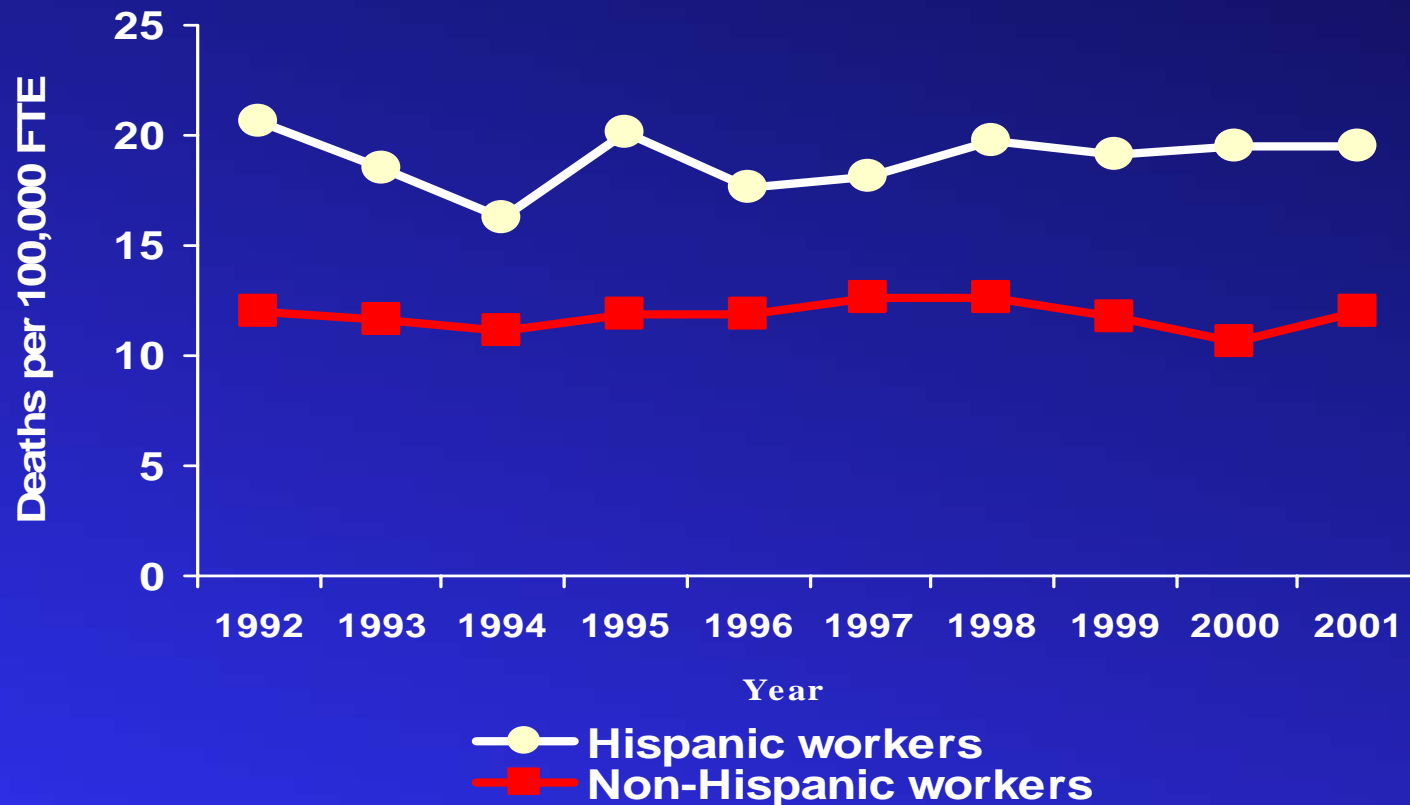
- Construction Sector has special populations with unique needs and disproportionate risks
  - Immigrant workers
  - Young workers
  - Women workers
  - Small employers & self-employed
- Work-related death rates for Hispanic construction workers are 80% higher than non-Hispanic counterparts.
- Construction represents 3.7% of working youth aged 15-17 years, but 18% of young worker deaths.
- Firms with 1-19 employees account for 39% of construction workforce and 55% of work-related deaths.



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# Fatal occupational injuries rate in construction, 1992-2001





# Issues (2/2)

## Sub-goal (3): Training

- Self-directed work
- Cyclical schedules
- Temporary employment
- Mobile worksites

## Sub-goal (4): Promising Approaches

- Exposure assessment (Job Hazard Analysis)
- Role of owners and managers
- Project specifications
- Design and engineering solutions



## Sub-goal (5): Diffusion

- Temporary nature of work
- Complex organizational relationships



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# External factors (1/2)

- Limitations in current data sources
- Cultural and language barriers
- Violations of state and federal child labor laws
- Construction industry demographics



## External factors (2/2)

- Risk-taking nature of the industry
- Short-term competitive contracting
- Collecting representative information
- Adoption of innovations



# Activities

## Sub-goal (2): Special Populations

### Major research

#### *Hispanic workers*

Research investigating safety culture, work practices, risk perception, and time in U.S.

Developing culturally-tailored OSH training modules and evaluating their impact



#### *Women in construction*

Impact of job stressors (sexual harassment, gender based discrimination, job satisfaction)

Identified exposure to chemical and physical agents, lifting/bending injuries, falling, poor access to training



# Activities

## Sub-goal (2): Special Populations

### Major research

#### *Young workers*

Collaboration with Traumatic Injury Program focused on the magnitude and circumstances of young worker injuries, guidelines for investigating fatal incidents, State based FACE reports

NIOSH recommended a new Hazardous Order to DOL for young workers, NPR comments due to OSHA in 2007

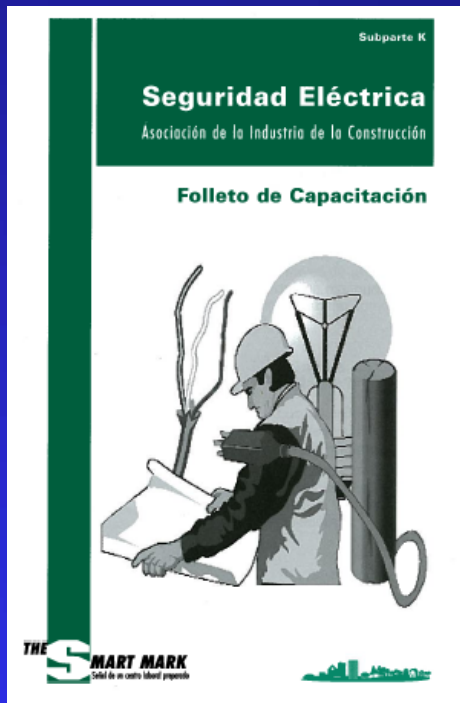
UNC study on Latino workers, UTN study on age as a factor contributing to fatalities and WA state study on noise-induced hearing loss in newly hired workers



# Activities

## Sub-goal (3): Training

### Major research



- Smart Mark Curriculum 10-hour standardized safety and health training for the industry
- CD-Rom targeting young workers for supervisors, superintendents, and career and technical schools – "Safety Checklists Program"
- Survey open shop (non-union companies) on training
- National construction research agenda
- National joint labor-management committee with AFL-CIO, National Constructors Assoc. and 15 building trades affiliates (representing 3 million workers and 40,000 construction employers)



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# Activities

## Sub-goal (4): Promising Approaches

### Major research

- Input from designers, contractors, and users improves building safety in construction
- Space for staging and access for construction workers, anchorage points, and off-site fabrication result in decreased on-site exposures
- Designer/contractor collaborations yield improvements in
  - Sequencing
  - Scheduling
  - Quality
  - Safety
- Owners avoided costly post-construction work to eliminate hazardous design features - Nominated for NORA partnering award



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# Activities

## Sub-goal (5): Diffusion

### Major research

- Research identified chemical, physical and ergonomic hazards associated with specific trades and tasks

Task-Based Exposure Assessment Method (T-BEAM) collects uncontrolled and controlled exposure data: 7 trades, 25 sites nationwide – silica, welding fumes, metals, respirable dusts

- Information on hazards and risk controls are entered into a single point-of-entry database (Solutions)
- Gaps in knowledge identified; research conducted to validate the efficiency of control options



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# Outputs

## Sub-goal (2): Special populations

### Publications

– 32 papers; 12 presentations

### Products and technologies developed

#### Hispanic workers

Briefings to Congress

Radio interviews on NPR

Participation in OSHA Hispanic Task Force

Creation of national conference on immigrant workers

#### Young workers

Distributed 8,000 copies pamphlet to small contractors nationwide (info. on young worker rights)

Advisors to DOL Employment Standards Committee

#### Women in construction

Presentations and publications on perspectives of women in the trades



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# Outputs

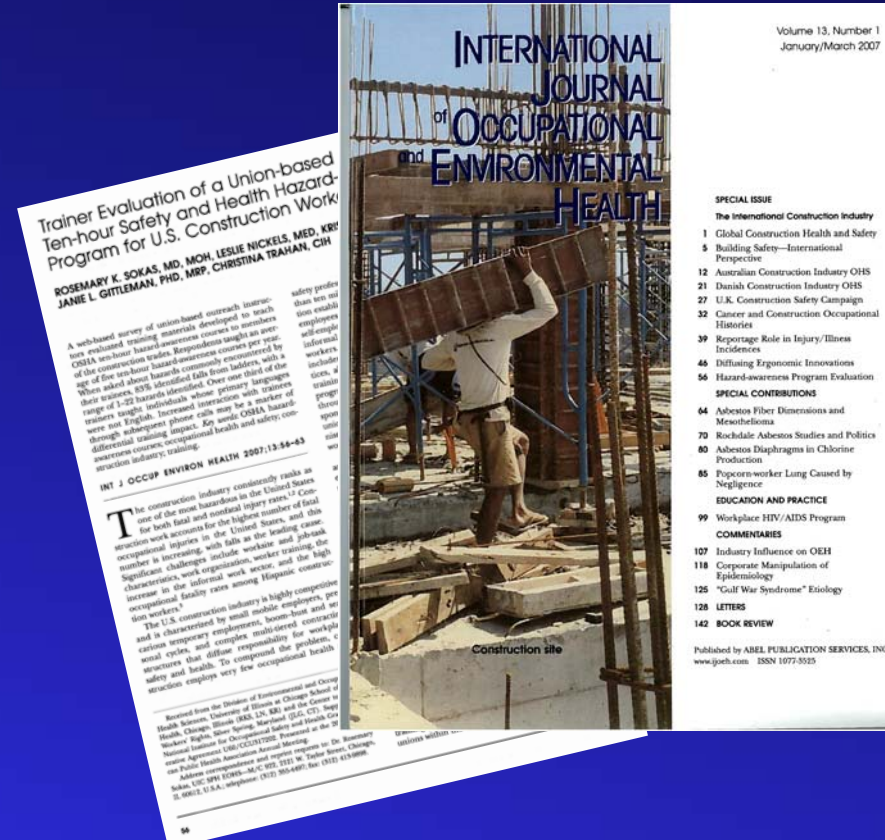
## Sub-goal (3): Training

# Publications

- 13 papers; 10 presentations

# Products and technologies

– 5 major products



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# Training Products



eLCOSH

ELECTRONIC LIBRARY OF CONSTRUCTION OCCUPATIONAL SAFETY & HEALTH

Locate Items By:

Hazard  
Trade  
Job Site  
Other

Training

Español

Non-English Materials

Search

Site Map

Links

Help

Contact Us

What's New

Upcoming Meetings

eLCOSH Intro (uses Flash 6)

CDC

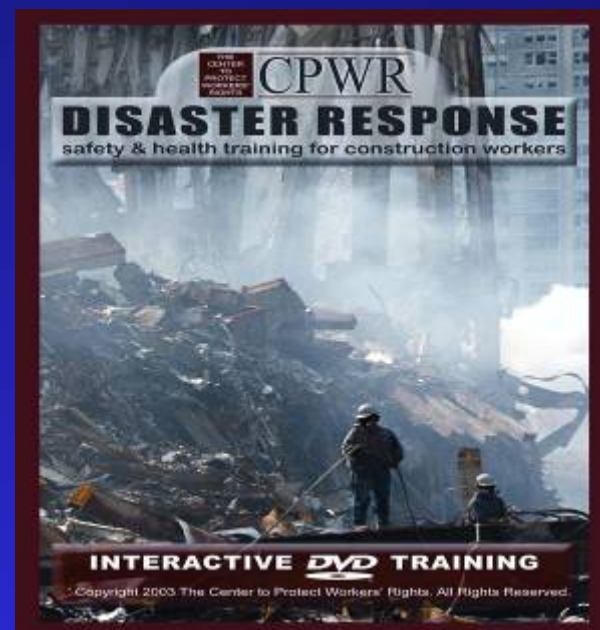
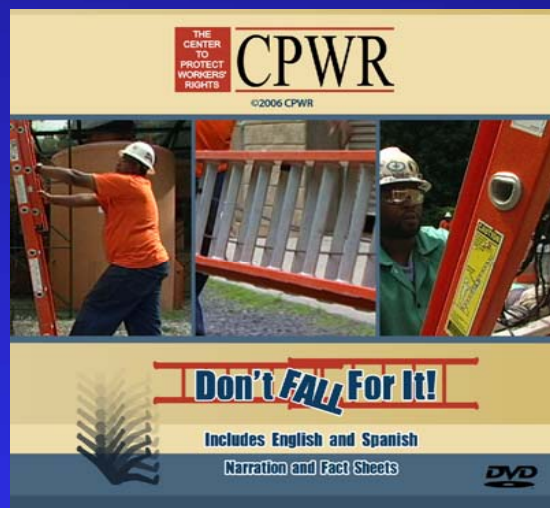
NIOSH

About

Developed by the Center to Protect Workers' Rights with funding by NIOSH



Professional Skin Protection  
for  
Work with Wet Portland Cement



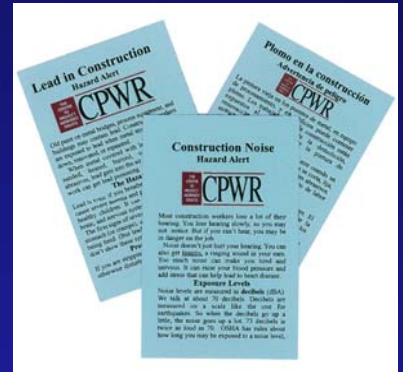
# Outputs

## Sub-goal (5): Diffusion

### Publications

- electronic Library of Construction Safety and Health eLCOSH (launch 2000) grown from 475 to 836 documents  
[www.eLCOSH.org](http://www.eLCOSH.org)

- 1.5 million Hazard Alert Cards distributed



### Products and technologies developed

- 30-second PSAs on eLCOSH (in English and Spanish) reach listeners in NYC, Los Angeles, San Antonio, Chicago, target audience of 13.8 million
- eLCOSH CD ROMs distributed at national meetings
- Don't Fall For It DVD: over 2,000 copies distributed



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# Intermediate Outcomes

## Sub-goal (2): Special Populations

- Data on Hispanic construction workers have been frequently requested and cited by labor unions, insurance companies, Hispanic organizations and business owners



- DOL incorporated some of the NIOSH recommendations on Hazardous Orders affecting children in hazardous occupations between the ages of 16-18
- Researchers involved in Women in Construction workgroup established by OSHA's Advisory Committee on Construction Safety and Health



# Intermediate Outcomes

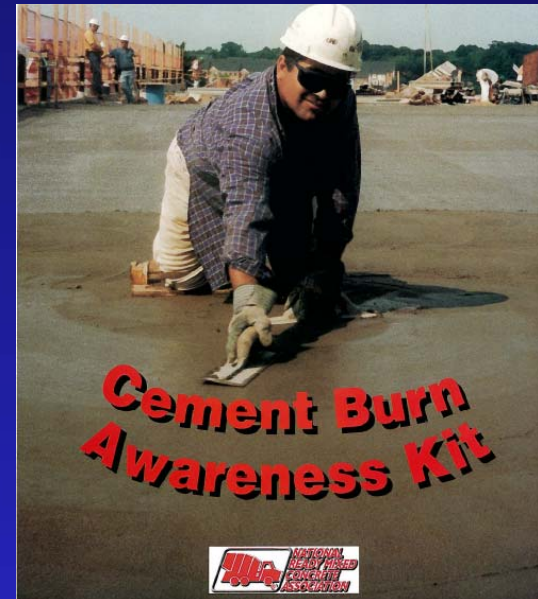
## Sub-goal (3): Training

- Smart Mark training adopted project owners

- TVA employs over 15,000 construction workers
- Public works projects in CT, and MA.
- 50,000 workers trained/year
- over 500,000 workers trained since inception

- Occupational Dermatitis Training

Integrated into national training programs  
Cement Masons, Bricklayers and Allied  
Craftworkers, and the Laborers' International  
Union of North America, reaching over 700,000  
workers





# Intermediate Outcomes

## Sub-goal (4): Promising approaches

- Patent for Local Positioning System (LPS) tool and real-time monitoring process to ID exposure hot spots now pending by the Patent Trade Office
- The Construction Industry Institute (CII) uses NIOSH supported survey research on owner practices –shared with 50 owner members
- Pre-construction interventions at the project design phase OSHA approved Design for Safety Alliance
- American Institute of Architecture Code of Ethics changed language to address methods of construction

# Intermediate Outcomes

## Sub-goal (5): Diffusion

Over 10,000 copies of Construction Chart Book distributed more than 1.7 million visitors have used the eLCOSH web-site

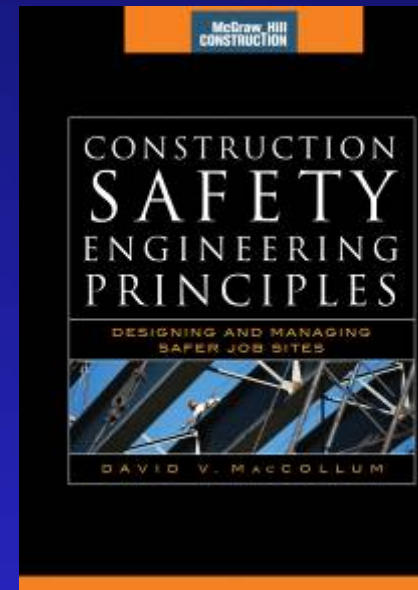
- Google search found 14,000 references to eLCOSH
- eLCOSH link to CDC Spanish web master
- PAHO web-site and State OSHA plans

Trainer/educators using Don't Fall For It DVD in OSHA 500 course nationwide

- Liberty Mutual Construction Safety Roundtable distribution
- Campaign with Vocational Technical Schools in MA.

Collaboration with The Washington Group International

- Training for 1,000 of its 1,800 engineers globally
- Safety Engineering Principles-McGraw Hill



# What's Ahead

## **Sub-goal (2) Special Populations:**

Address the needs of vulnerable populations: Hispanic workers, young workers, small employers, and self-employed

## **Sub-goal (3) Training:**

Evaluate the effectiveness of training approaches

## **Sub-goal (4) Design for Safety:**

Construction Hazard Prevention through Design

## **Sub-goal (5) Diffusion:**

- New edition of Construction Chart Book
- Expand eLCOSH materials, conduct a users survey, and add MP3 videos and image library
- Testing of Solutions Database on task hazards and solutions
- Identify barriers to innovation through new social marketing approaches